



LOCTITE EA 9330.3 AERO Epoxy Paste Adhesive (KNOWN AS Hysol EA 9330.3)

INTRODUCTION

LOCTITE EA 9330.3 AERO is a two-component thixotropic paste adhesive with low slump and high peel strength. This easy mix system maintains high tensile shear strength to 160°F/71°C. LOCTITE EA 9330.3 AERO is the thixotropic version of LOCTITE EA 9330 AERO.

FEATURES

- Two Component System
- Low Slump
- Room Temperature Cure
- Easy Mix
- High Peel Strength

Uncured Properties

	<u>Part A</u>	<u>Part B</u>	<u>Mixed</u>
Color	Gray	Clear	Gray
Viscosity, 77°F Brookfield, HBT	1200-5500 Poise Spdl 7 @ 20 rpm	220-484 Poise Spdl 5 @ 20 rpm	
Viscosity, 25°C Brookfield, HBT	120-550 Pa·S Spdl 7 @ 2.1 rad/s	22.0-48.4 Pa·S Spdl 5 @ 2.1 rad/s	
Density, g/ml	1.17	1.06	1.14
Warranty Life @ <77°F/25°C	1 year	1 year	

Handling

Mixing - This product requires mixing two components together just prior to application to the parts to be bonded. Complete mixing is necessary. The temperature of the separate components prior to mixing is not critical, but should be close to room temperature (77°F/25°C).

<u>Mix Ratio</u>	<u>Part A</u>	<u>Part B</u>
By Weight	100	33

Note: Volume measurement is not recommended for structural applications unless special precautions are taken to assure proper ratios.

Pot Life (100 gram mass) 60 minutes @ 77°F/25°C
Method - ASTM D 2471 in water bath.





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Application

Mixing - Combine Part A and Part B in the correct ratio and mix thoroughly. THIS IS IMPORTANT! Heat buildup during or after mixing is normal. Do not mix quantities greater than 250 grams as dangerous heat buildup can occur causing uncontrolled decomposition of the mixed adhesive. TOXIC FUMES CAN OCCUR, RESULTING IN PERSONAL INJURY. Mixing smaller quantities will minimize the heat buildup.

Applying - Bonding surfaces should be clean, dry and properly prepared. For optimum surface preparation consult the LOCTITE Surface Preparation Guide. The bonded parts should be held in contact until the adhesive is set. Handling strength for this adhesive will occur in 24 hours (>77°F/25°C), after which the support tooling or pressure used during cure may be removed. Since full bond strength has not yet been attained, load application should be small at this time.

Curing - LOCTITE EA 9330.3 AERO may be cured for 5 to 7 days @ >77°F/25°C to achieve normal performance. Accelerated cures up to 200°F/93°C (for small masses only) may be used as an alternative. For example, 1 hour @ 180°F/82°C will give complete cure.

Cleanup - It is important to remove excess adhesive from the work area and application equipment before it hardens. Denatured alcohol and many common industrial solvents are suitable for removing uncured adhesive. Consult your supplier's information pertaining to the safe and proper use of solvents.

Bond Strength Performance

Tensile Lap Shear Strength

Tensile lap shear strength tested per ASTM D1002 after curing for 5 days @ 77°F/25°C. Adherends are 2024-T3 AlClad aluminum treated with phosphoric acid anodizing per ASTM D3933.

<u>Test Temperature, °F/°C</u>	<u>Typical Results</u>	
	<u>psi</u>	<u>MPa</u>
-67/-55	5,700	39.3
77/ 25	4,900	33.8
160/71	1,700	11.7
180/82	1,100	7.6

Tensile Lap Shear Strength with Variable Bondline Thicknesses

<u>Bondline Thickness:</u>	<u>Typical Results</u>									
	<u>3 mils</u>		<u>5 mils</u>		<u>10 mils</u>		<u>50 mils</u>		<u>75 mils</u>	
	<u>(0.08mm)</u>		<u>(0.13mm)</u>		<u>(0.25mm)</u>		<u>(1.27mm)</u>		<u>(1.91mm)</u>	
<u>Test Temperature</u>	<u>psi</u>	<u>MPa</u>	<u>psi</u>	<u>MPa</u>	<u>psi</u>	<u>MPa</u>	<u>psi</u>	<u>MPa</u>	<u>psi</u>	<u>MPa</u>
77°F/25°C	5,200	35.8	5,000	34.5	4,800	33.1	4,200	28.9	3,800	26.2





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Tensile Lap Shear Strength with Variable Cure Conditions - all specimens cured 5 days @ 77°F/25°C plus a post cure as noted:

**Post Cure @ 160°F/71°C
Typical Results**

<u>Test Temperature</u>	3 days		7 days		15 days		30 days		60 days	
	<u>psi</u>	<u>MPa</u>	<u>psi</u>	<u>MPa</u>	<u>psi</u>	<u>MPa</u>	<u>psi</u>	<u>MPa</u>	<u>psi</u>	<u>MPa</u>
77°F/25°C	5,400	37.2	6,000	41.3	6,100	42.0	6,200	42.7	6,000	41.3
160°F/71°C	2,300	15.8	2,100	14.5	2,200	15.2	2,400	16.5	2,100	14.5

T-Peel Strength with Variable Bondline Thicknesses and Peel Rate

T-Peel strength tested per ASTM D1876 after curing for 5 days @ 77°F/25°C. Adherends are 2024-T3 AlClad aluminum treated with phosphoric acid anodizing per ASTM D3933.

**Bondline Thickness Performance
Typical Results**

**Peel Rate Performance
Typical Results**

<u>Test Temperature</u>	<u>Bondline Thickness Performance</u>		<u>Peel Rate Performance</u>	
	<u>mils (mm)</u>	<u>lbs/in (N/25mm)</u>	<u>in/min. (mm/min.)</u>	<u>lbs/in (N/25mm)</u>
77°F/25°C	3 (0.08)	50 (223)	2 (51)	45 (200)
	5 (0.13)	50 (223)	5 (127)	45 (200)
	10 (0.25)	55 (245)	10 (254)	45 (200)
	20 (0.50)	60 (267)	12 (305)	45 (200)
	30 (0.76)	58 (258)	30 (762)	45 (200)

Floating Roller (Bell) Peel per ASTM D3167

Bell Peel tested after curing 5 days @ 77°F/25°C.

Typical Results

<u>Test Temperature, °F/°C</u>	<u>lbs/in</u>	<u>N/25mm</u>
-67/-55	29	129
77/25	93	414
160/70	12	53

Service Temperature

Service temperature is defined as that temperature at which this adhesive still retains 1000 psi (6.9 MPa) using test method ASTM D 1002 and is 180°F/82°C.



LOCTITE EA 9330.3 AERO

Epoxy Paste Adhesive

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Bulk Resin Properties**Tensile Properties** – tested using 0.125 inch/3.18 mm castings per ASTM D638.

Tensile Strength @ 77°F/25°C	6,100 psi	42.0 MPa
Tensile Modulus @ 77°F/25°C	390 ksi	2687 MPa
Elongation at Break @ 77°F/25°C	9%	
Shore D Hardness @ 77°F/25°C	81	
T _g (by DMTA)	129°F	54°C

Density - tested per ASTM D1622, g/cc 1.11**Electrical Properties** - tested per ASTM D149, D150.

Dielectric Constant, 1 KHz, 77°F/ 25°C	4.46
Dissipation Factor, 1 KHz, 77°F/25°C	0.013

Handling Precautions

Do not handle or use until the Material Safety Data Sheet has been read and understood.
For industrial use only.

DISPOSAL INFORMATION

Dispose of spent remover and paint residue per local, state and regional regulations. Refer to HENKEL TECHNOLOGIES MATERIAL SAFETY DATA SHEET for additional disposal information.

PRECAUTIONARY INFORMATION**General:**

As with most epoxy based systems, use this product with adequate ventilation. Do not get in eyes or on skin. Avoid breathing the vapors. Wash thoroughly with soap and water after handling. Empty containers retain product residue and vapors so obey all precautions when handling empty containers.

PART A

CAUTION! This material may cause eye and skin irritation or allergic dermatitis. It contains epoxy resins.

PART B

WARNING! This material causes eye and skin irritation or allergic dermatitis. It contains amines.

Before using this product refer to container label and HENKEL TECHNOLOGIES MATERIAL SAFETY DATA SHEET for additional precautionary, handling and first aid information.



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